

Demand for Higher Education

Washington Higher Education Funding and Enrollment
Study, for the Washington Learns Committee



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A Progress Report from NORED, April 2006





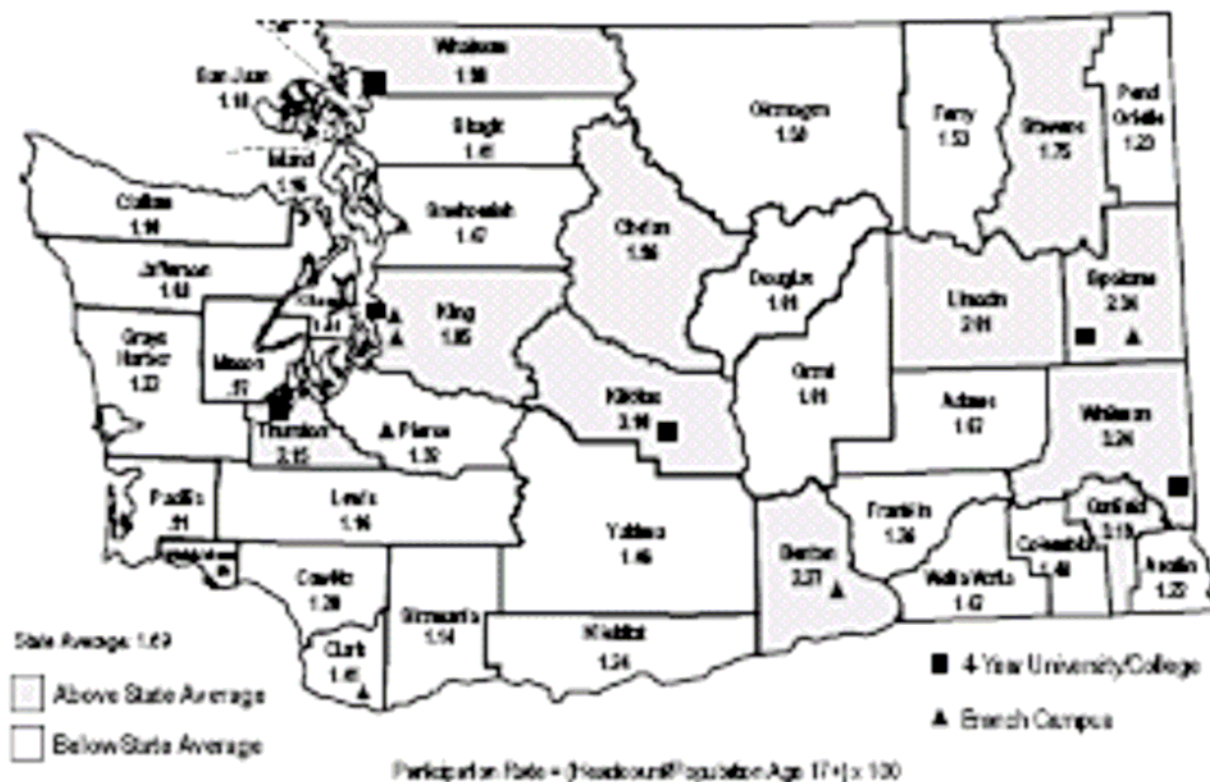
Three kinds of demand

- Students seeking access to higher education
- Employers seeking to hire appropriately skilled graduates
- Regions seeking a higher education presence that will catalyze development
- Context-globalization makes both employers and students shift towards higher skills; potential students in different parts of the state and different race/ethnic groups have very different participation rates

Participation Rates:

Inadequate access for the place-bound or low current economic demand for skills?

Public 4-Year College and University Participation Rates
by County, Fall 2004





Projected Enrollments

- OFM projects 140,475 annual FTEs in the CTCs in 2009-10 and 98,583 in the public 4-year institutions
 - OFM notes that nearly 23,000 new FTEs are required by 2010 to keep participation rates constant given OFM population projections, and about 35,000 new FTEs are needed by 2020
 - <http://www.ofm.wa.gov/hied/highlights/section2.pdf>
- HECB projects 149,543 in the CTCs and 99,677 in the public 4-year institutions in 2009-10
 - HECB projections for 2009-10 show an increase of 21,041 over 2004 enrollments; HECB projections are based on trends in degree production, and an extrapolation from degrees to FTE enrollments needed
 - <http://www.hecb.wa.gov/docs/State%20and%20Regional%20Needs%20Assessment%20Publication.pdf>
- Independent colleges/universities assumed to maintain their current share of enrollments

Workforce demand:

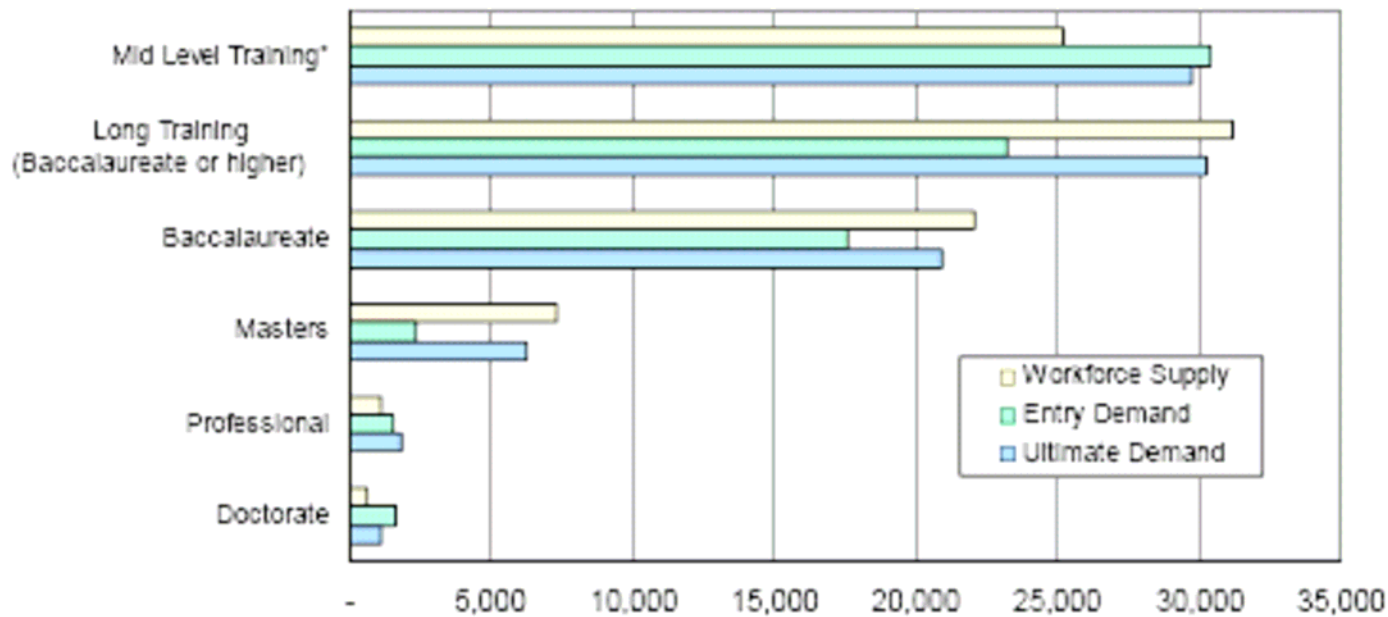
Compare ESD long term projections to in-state degree production

- Current projections go out to 2012 – new projections to 2014 in June
- About 700 occupations; data are available on education level of incumbent workers in each occupation (national Census data) so projected openings can be sorted by education level
- Two kinds of openings – openings due to expansion of an industry, and openings due to a vacancy created by a retirement or a person leaving an occupation for other reasons
- With a bit of sorting and adding of the projections, and matching to educational program completion data, one can compare the supply coming out of our colleges and universities with the demand likely to come from employers
- This approach does not consider the role of in- and out-migration; WA is a net importer of BA+ workers – key question is how to make more of these high wage career opportunities available to people who grow up here
- Projection methodology is slow to adapt to new industries, new occupations, and shifts in the utilization of high skilled individuals by employers – it may systematically underestimate employer demand for workers with BA and higher degrees

HECB Analysis: Aggregate Balance at BA Level

Figure 11

Supply and Demand for Trained Workers by Education Level



* Mid-level supply is based on 2002-2003 data.

*Ultimate demand = further education after entry into an occupation

Deficits for CTC programs and Prof/Doc. Programs

Aggregate balance at BA level

Aggregate analysis hides issues for specific occupations



Aggregate Analysis Hides a Number of Specific Shortages

- 2002 analysis for SBCTC – demand greater than in-state completion rates in health care, information technology, construction and some transportation-related occupations
- HECB 2005 analysis points to similar imbalances in engineering, information technology, and health care
- The number of bachelors-level graduates has declined in engineering, mathematics, health care, and physical sciences; domestic and foreign immigrants are one way employers deal with workforce shortages that may result
- Technology Alliance report notes that startup technology firms are not able to recruit talent from other states – inadequate degree production may limit the number of startups or their growth rates
- High school graduates who pursue higher education in other states often do not return – part of the solution to workforce issues might be to keep more young people in the state with improved higher education programs
- Graduate program deficits – even though the market for PhD's and some masters degrees is national, the projections indicate an opportunity to expand these programs. Dynamic new industries would particularly benefit from some strategic investments in graduate programs.



2002 Supply-Demand Estimates for CTC Programs: Construction

Demand-Supply Balance in Construction

	Projected Annual Openings, 2005-2010	Annual Completions	Completions as Percent of Annual Openings
Carpenters	1063	169	16%
Construction laborers	364	14	4%
Electricians	582	155	27%
First Line Supervisors	449	0	0%
Plumbers	381	76	20%

There are multiple pathways into the construction trades but the CTC programs, in partnership with apprenticeship sponsors, are an important component and employer demand is well in excess of current capacity; attracting students can be a challenge



2002 Supply-Demand Estimates for CTC Programs: Health Care

Demand-Supply Balance in Health Care

	Projected Annual Openings, 2005-2010	Annual Completions	Completions as Percent of Annual Openings
Registered nurses	2116	868	41%
Nursing aides	802	363	45%
Medical secretaries	507	177	35%
Medical assistants	553	262	47%
Dental assistants	442	252	57%

This analysis suggests that many health care programs could be doubled in size without satisfying likely employer demand



Specific supply deficits noted in HECB Report

Training for initial entry into the occupation	Degree Production as Percent of Employer Demand
Engineering, software engineering and architecture	67
Computer science	56
Additional training after entry into the occupation ("Ultimate Demand" four slides back)	
Health	65
Editing, writing, performing, protective service	75
Research, scientific, and technical	89



A major missing piece of data: Where do the graduates go?

- Universities do not track workforce outcomes of graduates
- SBCTC and WTECB match “completers” from the colleges and training programs to ESD data to determine how many are employed and what they earn
- Universities have not done this but could easily join this established “DLOA” system
 - There is no occupational identifier in the ESD data but there is an industry identifier, along with earnings
 - Compared to short term training and CTC degree/certificate completers, there will be more university graduates leaving the state
 - Asking the universities to utilize this matching system is a relatively low cost option to learn a lot more about how well the universities are meeting employer needs in various industries
- Data of this sort enable rate of return analyses that would strengthen the argument for more capacity in the higher education system – analyses in other states show economic rates of return of 8-14 percent per year of additional higher education, plus other social benefits (more on this in June)

Cost Benefit Analysis for CTC Programs based on the ESD match data

Table 1.3 Discounted Benefits and Costs of Washington's Education and Training System, by Program

Program	First 2.5 years				Lifetime			
	Participant		Public		Participant		Public	
	Benefit	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost
JTPA II-A	\$ 200	\$ 360	\$ 4,348	\$ 3,384	\$ 52,428	\$ 360	\$ 21,450	\$ 3,384
JTPA II-C	-2,500	343	1,865	2,325	29,819	343	6,793	2,325
JTPA III	4,240	12,175	960	2,575	68,485	12,175	21,867	2,575
Comm. College ABE	2,818	278	-2,026	983	5,911	278	405	983
Comm. College Job Preparation	4,179	4,493	1,885	6,916	117,849	4,493	34,891	6,916
Comm. College Worker Retraining	1,941	16,630	1,385	4,692	59,300	16,630	20,222	4,692
High School Career and Technical Education	2,747	0	902	870	60,050	0	11,186	870

NOTE: Benefits for a participant include discounted values of earnings and fringe benefits less taxes plus income transfers (TANF, Food Stamps, Medicaid, UI benefits); for the public, benefits include tax receipts minus transfer payments. Costs include direct program costs (public and participant, if tuition/fees) and foregone earnings (participant). Table entries in '01 \$.

Source: Hollenbeck and Huang, 2003 report from Upjohn Institute

Note – a new study by Hollenbeck is underway – new data by fall 2006



Demographic dilemma:

Participation rates among growing minority populations

- A significant proportion of adult basic education and ESL training capacity is provided to immigrants
- Growing minority/immigrant populations suggest a need to expand these programs, or the state will be increasingly unable to meet employer needs; this problem is shared with other states that attract many immigrants, e.g., Texas
- Solving this problem will be expensive because the immigrant population is growing and young (implying further growth once people settle in this state)
- A promising model for educating the adults is combining ABE/ESL with specific occupational training – I-BEST



Regional economic development and higher education

- In recent years, Spokane, Tacoma, and Vancouver have lobbied for establishment of 4 year institutions; branch campuses were created in response to this demand – a relatively high cost solution that met local demand for a “name brand” institution
- The participation rates explain part of the reason for this demand, but the demand for a research university presence also suggests that these regions are looking for more than just access for place bound students
 - Research programs that drive industry development
 - Practical “extension” type services to firms
 - Flexible advanced training for current workforce
- Who is next? Skagit/Snohomish study underway; Kitsap County; rural areas - No Central & Olympic Peninsula; evolution of mission/size for Tri-Cities and Vancouver
- Is there a lower cost solution than more branch campuses of the research universities?



Comparative Approach to Workforce Demand

- Participation rates may rise as young people understand the implications of globalization and new technology, provided that capacity is available
- Employers may continue to demand higher skills, and more workers with BAs due to anticipated shifts in technology and markets, requiring more flexible, adaptive, creative workers
- Occupational projections do not capture these shifts very well
- One way to estimate these needs is to rank Washington relative to other states and set a goal
- E.G.: Prosperity Partnership is asking for information on what other states are doing in terms of overall BA production and specifically science and engineering degree production

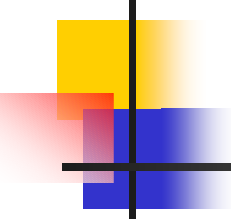
Global Challenge States:

BA Degree Production (all majors)
per 1,000 Residents Aged 18-24

	1993	1998	2003
Massachusetts	71.3	80.5	74.7
Connecticut	51.1	53.6	52.9
Colorado	57.8	54.8	51.8
Minnesota	58.7	52.3	49.2
Maryland	47.6	50.1	47.8
Virginia	45.0	46.2	47.1
North Carolina	42.4	48.5	45.3
Washington	42.1	43.4	41.3
New Jersey	35.6	37.4	40.8
California	35.0	34.4	36.6
United States	45.3	46.5	46.5

Global Challenge States:

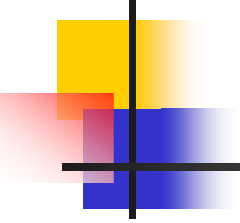
Science & Engineering Bachelor's Degrees per 1,000 Residents Aged 18-24



	1993	1998	2003
Massachusetts	18.83	20.02	24.78
Connecticut	11.99	12.59	16.83
Maryland	10.34	11.61	14.80
Colorado	15.15	15.76	14.51
Virginia	9.97	10.47	12.68
California	9.61	9.92	12.01
New Jersey	8.75	9.07	10.71
Minnesota	9.53	10.30	10.70
North Carolina	8.20	8.70	9.40
Washington	7.12	7.25	7.83
United States	10.37	10.38	11.76

Global Challenge States:

Science & Engineering BA Degree Production per 1,000 Residents Aged 18-24



	1993	1998	2003
Massachusetts	11.08	14.23	12.56
Colorado	11.30	12.31	10.91
Maryland	8.39	10.08	10.40
Minnesota	7.86	8.92	8.23
Virginia	7.36	8.33	7.95
North Carolina	7.06	9.08	7.78
New Jersey	5.55	7.18	7.72
California	6.10	6.88	6.90
Washington	6.30	7.26	6.84
Connecticut	7.16	7.68	6.54
United States	6.89	7.95	7.82